



Feature

Next Generation Internet Promises Increased Speed

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By 2002 the Next Generation Internet (NGI) could run a million times faster than today's modern home computer modems, according to NASA engineers. NGI is a \$300 million federal project, which when complete will enhance Internet operations to 1000 times faster than a current standard T1 business computer line. NASA's \$30 million portion of the research and development project will be led by Ames Research Center (ARC) in Mountain View, California.

President Clinton endorsed the NGI concept in his State of the Union address, saying, "We must build the second generation of the Internet so that our leading universities and national laboratories can communicate at speeds 1000 times faster than today, to develop new medical treatments, new sources of energy, new ways of working together."

ARC's Director, Henry McDonald, announced recently that, beginning in October 1997, ARC will lead NASA in the NGI project, spending about \$10 million annually over a three year period and will involve about 30 full

time, dedicated workers. "Ultimately, the NGI will have a huge beneficial economic impact after network speed increases are migrated over to the Internet," he said.

NASA Program Manager, Bill Feiereisen, stated that the federal government is going to hook up about 100 universities, research labs, and other institutions at a hundred times the speed of today. Currently NASA has five research sites connected at 155 megabits (155,000,000 bits per second)—ARC, Goddard Space Flight Center in Greenbelt, Maryland, Langley Research Center in Hampton, Virginia, Lewis Research Center in Cleveland, Ohio, and the Jet Propulsion Laboratory in Pasadena, California. These sites will soon be converted from a speed of 155 megabits to 622 megabits.

Christine Falsetti, NGI project manager at ARC, stated, "We want to guarantee levels of service that will eliminate slowdowns and network stagnation that users sometimes have to endure now while waiting for Internet images, movies, and other services."

According to Falsetti, NASA, the Department of Energy, the National Science Foundation, and the Defense Advanced Research Projects Agency will conduct research and development that could interconnect “core sites” with high speed lines late this year. “Then we’ll connect to GigaPOPs across the country,” she said.

She explained that a ‘POP’ is a ‘point of presence,’ and ‘Giga’ stands for a billion (computer bits). A ‘GigaPOP’ is a regional group of core organizations that will connect their separate computer network systems by high speed communications lines. An example of a GigaPOP in the greater San Francisco Bay Area would be the high speed linking of ARC, Lawrence Livermore Laboratory, the University of California—San Francisco, and Stanford University. “Over time, we will improve GigaPOP interconnects so that they can transmit computer data at faster and faster rates,” she added.

Initially, NGI will be a national network, but international partners are being sought to meet the global needs and to build a research network. Technical advances are expected to spin-off from NGI. For example, medical use of NGI is expected to be a high profile application. Local doctors will be able to consult with specialists across the globe, providing increased access to medical expertise worldwide. Industry will put improvements into the ‘old’ Internet to make it work better and faster.

Our work should eventually allow users to do things that they can’t do today via the Internet,” Falsetti said. “For example, consumers might be able to see high quality video programs “on demand” and use high quality teleconferencing via the Internet as a result of this work.”

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